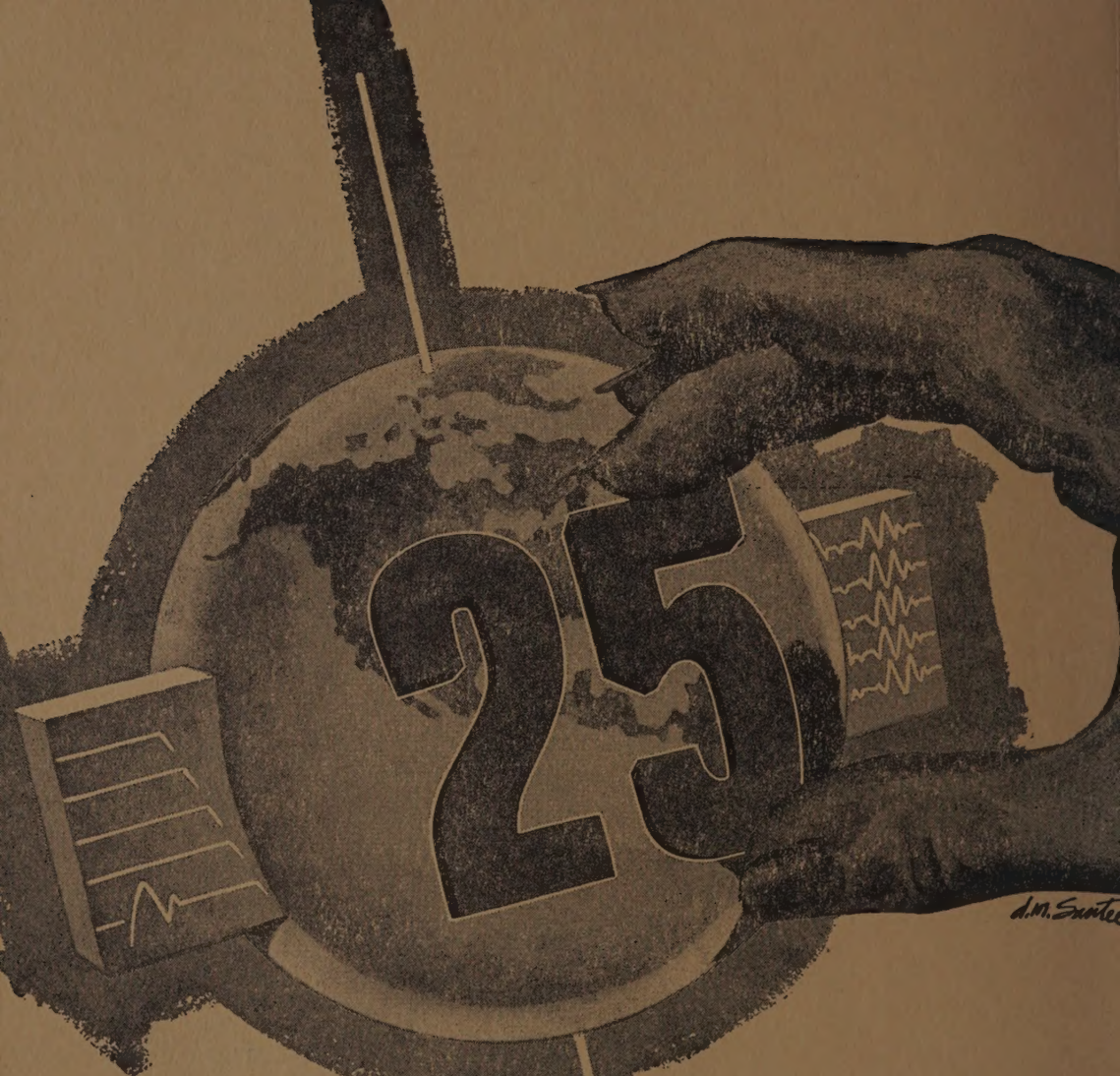


The Proceedings of the Geophysical Society of Tulsa

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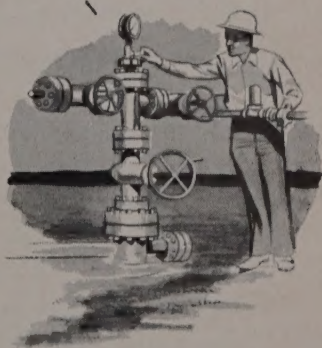
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VOLUME 3, 1955

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ABSTRACTS OF PAPERS AND LECTURES GIVEN BEFORE
THE GEOPHYSICAL SOCIETY OF TULSA

A NEW TECHNIQUE FOR SEISMIC EXPLORATION
KNOWN AS THE GEOGRAPH

by

R. L. PALMER

October 14, 1954

This technique uses the energy of a falling weight instead of dynamite. Signal-to-noise ratio of reflected events is claimed to be improved by a unique compositing system. Movies and slides will supplement the talk.

Abstract for
THE REYNOLDS PLOTTER

VINING T. REYNOLDS AND PAUL FARREN

November 11, 1954

A system of seismic data analysis is presented which mechanically identifies, times, computes, and plots in cross-section form (point plot) or record-section (full envelope of each trace) all events on a seismogram.

Velocity depth function, and normal move-out, weathering and elevation corrections, are applied to each trace individually as all traces of a seismogram are scanned and reproduced simultaneously by a mechanical process.

The system produces cross sections and record sections with speed, thoroughness, and accuracy. Convenience in correlation of the sections expands the output of the interpreter; flexibility in handling the mass of data facilitates special projects such as velocity, isopach, and magnetic tape studies; thoroughness of presentation of seismic evidence, especially segmental reflections, permit a more valid interpretation.

SOCIETY OF EXPLORATION GEOPHYSICISTS
DISTINGUISHED LECTURE TOUR

DR. CHAS B. OFFICER

Woods Hole Oceanographic Institution

December 8, 1954

TITLE: *SEISMIC EXPLORATION AND RESEARCH OVER OCEANIC AREAS*

SUMMARY:

The talk is divided into three parts.

The first is a discussion of the paper published in *Geophysics* on the refraction arrival in water covered areas and given the Best Paper award for

1953. A theoretical solution is given for the refraction arrival in water covered areas assuming an impulsive point source. The physical significance of the mathematical solution is discussed, and experimental verification of the theoretical predictions is presented. The character, frequency, and range dependence of the refraction arrival agree with theory. Knowledge of the frequency allows one to determine the seismic structure from a single shot and a single receiver. In general, knowledge of the frequency increases the potential information available on a record.

The second is a discussion of more recent investigations over deep ocean areas by seismic reflection profiles. Such profiles demonstrate that clear sub-bottom reflections and refractions are obtained which are interpretable to give a velocity structure with depth. One interesting conclusion is that the sediment is dispersive, i. e, that the velocity of sound propagation through it is a function of frequency and further that at the lower frequencies the velocity in the sediment near the bottom is less than that in the adjacent ocean. This rather interesting geophysical phenomenon is explained theoretically in terms of propagation in a porous medium. The low velocity section in the sediment forms a wave guide between the higher velocity ocean above and the higher velocity sediment beneath, thus explaining previously observed single frequency arrivals. A series of such profiles from Bermuda to the Continental Margins form a consistent set, which can be interpreted with the aid of previous seismic refraction investigations in terms of a layer of volcanics extending out from the Bermuda area across the abyssal plain.

The third is a discussion of the ships, facilities, and equipment that are used for oceanic geophysical work and the various analysis methods and equipment for reduction of the data in the laboratory.

A SYMPOSIUM ON MAGNETIC TAPE RECORDING

January 13, 1955

W. T. BORN (Chairman)

A SURVEY OF GEOPHYSICAL TYPE MAGNETIC RECORDERS

J. D. SKELTON

MAGNETIC RECORDING IN FIELD OPERATIONS

H. R. FRANK

A DISPLAY OF MAGNETICALLY RECORDED SEISMIC DATA

C. F. HADLEY

IMPROVING SIGNAL-TO-NOISE RATIO BY COMPOSITING MAGNETIC RECORDS

J. R. HIDEY

(Published in the Oil and Gas Journal, April 4, 1955)

SEISMOGRAM SYNTHESIS FROM VELOCITY DATA

DR. R. A. PETERSON
United Geophysical Corp.
February 10, 1955

The availability of continuous velocity data provides a closer insight into the seismic reflection process in layered rocks. Methods are described for the synthesis of seismograms from this data, and illustrations are given of field results.

INTERPRETATION OF A GEOPHYSICAL PROSPECT

by
R. W. MOSSMAN
March 10, 1955

(Published in the Proceedings of the Geophysical Society of Tulsa, Pages 20-26, Volume 2, 1954)

Illustration is given of the effect of geologic information on the interpretation of a seismic prospect, radically changing the economic attractiveness of the feature as additional geologic data are added.

ABSTRACT

A Study of Multiple Reflections in Northwestern Kansas

by
JOHN M. CRAWFORD AND ADRIAN A. BECKER
April 14, 1955

Originally assigned to examine a discrepancy between ΔT analyses and well velocity surveys, this study turned up some seismic arrivals which probably result from multiple reflections. Application of the various criteria identifies arrivals which correspond to correct travel times for multiples between the Cimarron anhydrite and reflectors above this formation, including the base of the weathered layer. Using postulated reflection coefficients, the amounts of energy observed in the multiple events are reasonable. In some portions of the project, arrivals previously carried as Arbuckle reflections are fairly well proven to be multiples.

AN OUTLINE OF SOME OF CAGNIARD'S RESULTS OF INTEREST IN SEISMIC PROSPECTING

S. E. ELLIOTT
Phillips Petroleum Company, Bartlesville, Okla.
April 14, 1955

L. Cagniard's book, *Reflexion et Refraction des Ondes Seismiques Progressives*, received little of the attention it deserved in this country until Dix's review of it appeared in *GEOPHYSICS*. Since that time Dix has published a

paper giving a resume of Cagniard's methods. However, nothing has been published concerning the actual results of Cagniard's investigations. The purpose of this paper is to review in an understandable, non-mathematical form those results which it is felt are of interest to seismic prospectors. The problem which Cagniard solves and the form of his solutions are discussed. The disposition of the wave fronts associated with the "transmission factors," which are an integral part of his solution is presented. The kinematic discontinuities propagated in a case of interest to seismologists are shown. The paper concludes with a discussion of surface wave phenomena.

EXPLORATION FOR URANIUM

by

DR. JOHN A. S. ADAMS

A. A. P. G. Distinguished Lecturer

May 2, 1955

(Published in Tulsa Geological Society Digest Volume 23, 1955, Pages 137 through 143.)

Uranium exploration and production today is an industry that involves over \$100,000,000 per year. The Atomic Energy Commission's plant is valued at over \$6,000,000,000. Domestic exploration and production has been encouraged by over four million in bonuses and extensive government activity in drilling, road building, aerial radiation surveys, and information services. The result has been a doubling in domestic uranium production about every 18 months since 1947. Many agencies and universities have carried out research on new methods for exploration and extraction. One example of research for new exploration techniques is the speaker's study of Wisconsin rivers, where it was indicated that the presence of 8 pounds of available uranium per square mile could be detected in rivers by micro-chemical techniques.

SHOOTING IN SAND

NORMAN RICKER

The Carter Oil Company

May 12, 1955

This paper describes field studies made in the Navajo Sandstone near Zion National Park in southwest Utah. Evidence is obtained that there is an abnormal absorption of elastic waves in the neighborhood of the shot, caused by a crushing of the sand grains by the explosion. This evidence is further supported by laboratory studies. To summarize the results of the studies, it may be stated that in the absence of sand crushing, the sandstone is quite transparent to seismic waves, but if crushing of the sand grains occurs there is intense absorption of the waves. (Authors' Abstract).

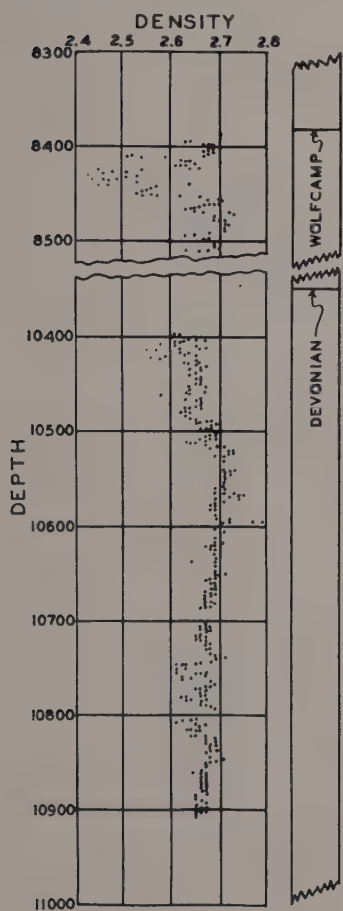


FIG.1

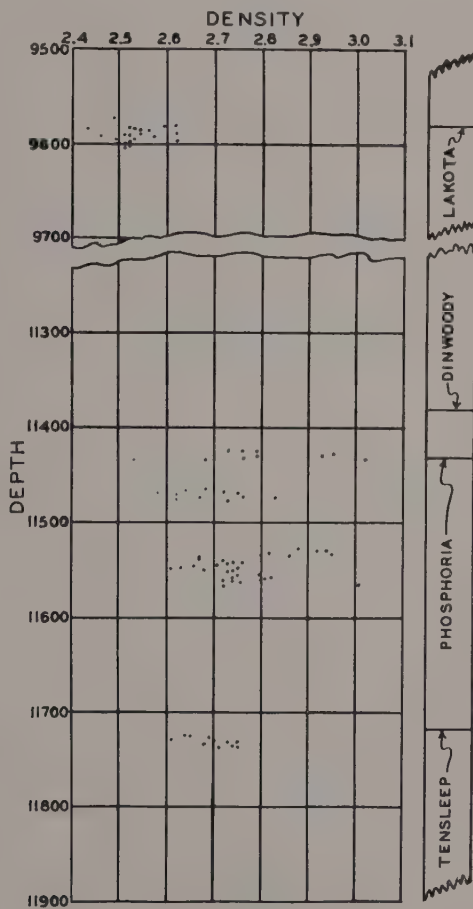


FIG.2

FIGURE 1. Atlantic — University 9C — No. 1, E/2 Sec. 14, University Lands Block 9, Andrews County, Texas.

COURTESY THE ATLANTIC REFINING COMPANY

FIGURE 2. Atlantic Tribal No. 6, C SW SW Sec. 30, T1S, R5E, Freemont County Wyoming.

COURTESY THE ATLANTIC REFINING COMPANY

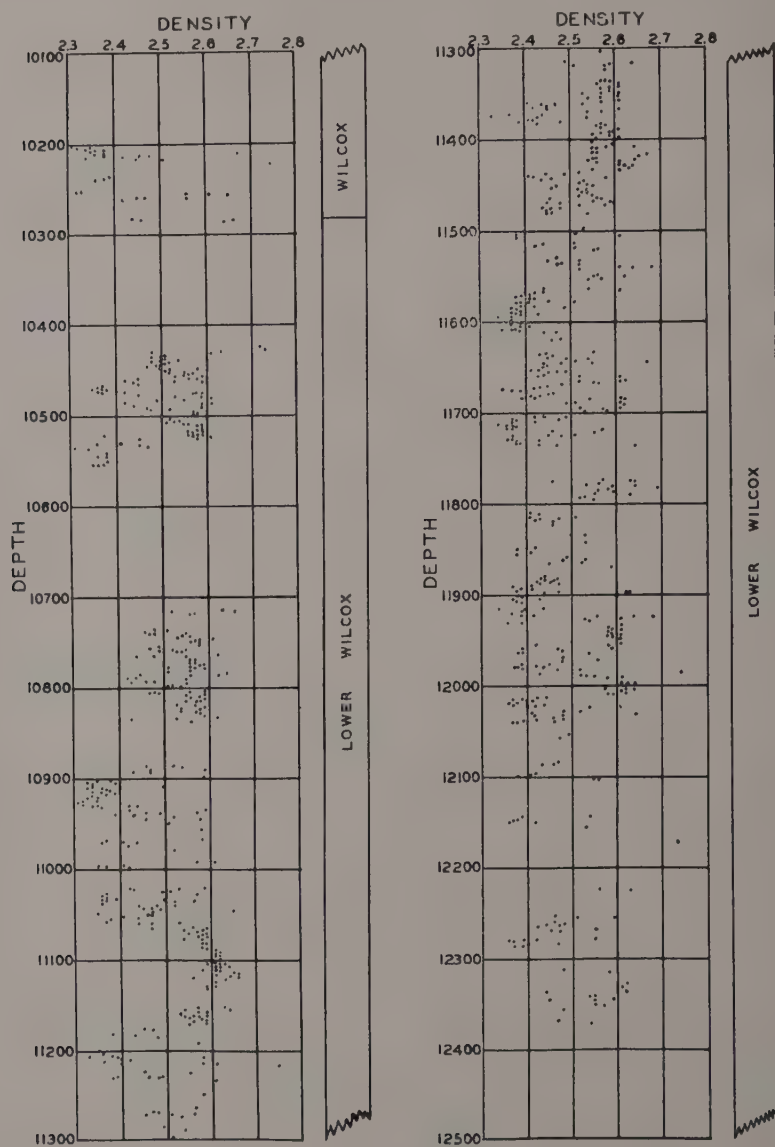


FIG. 3

FIGURE 3. Conoco No. 4, Folanie Tate, Sec. 44, T3S, R2E, Evangeline Parish, La.
COURTESY CONTINENTAL OIL COMPANY

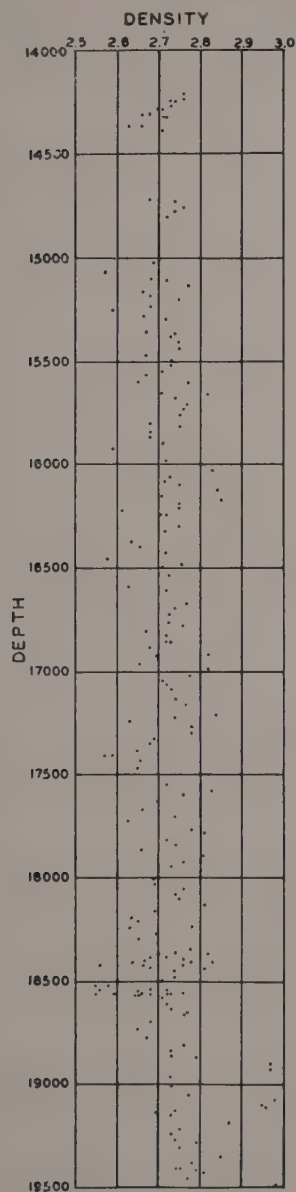


FIG. 4

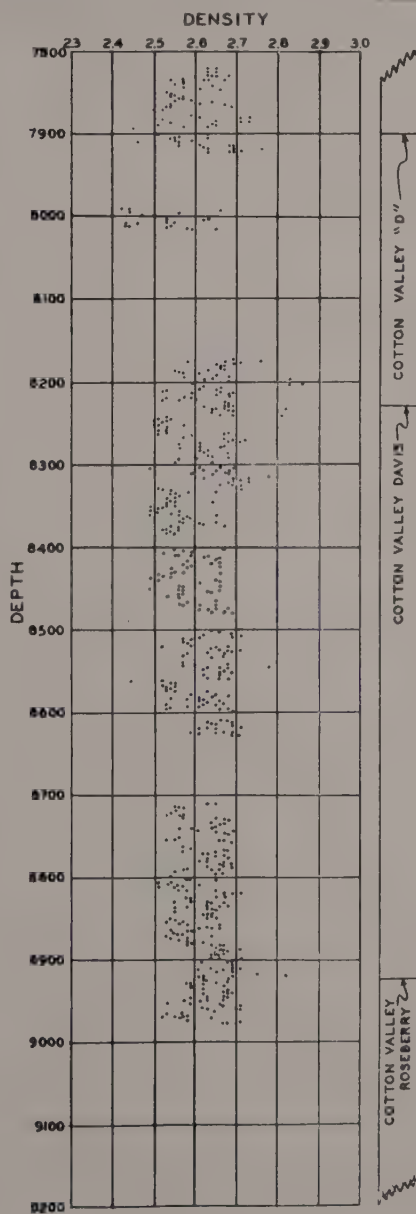


FIG. 5

FIGURE 4. George Vaseen No. 1 Fee, Sec. 9, T2S, R11W, Stone County, Mississippi.

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FIGURE 5. L. S. Carter No. 1, Sec. 36, T20N, R14W, Bossier Parish, Louisiana.

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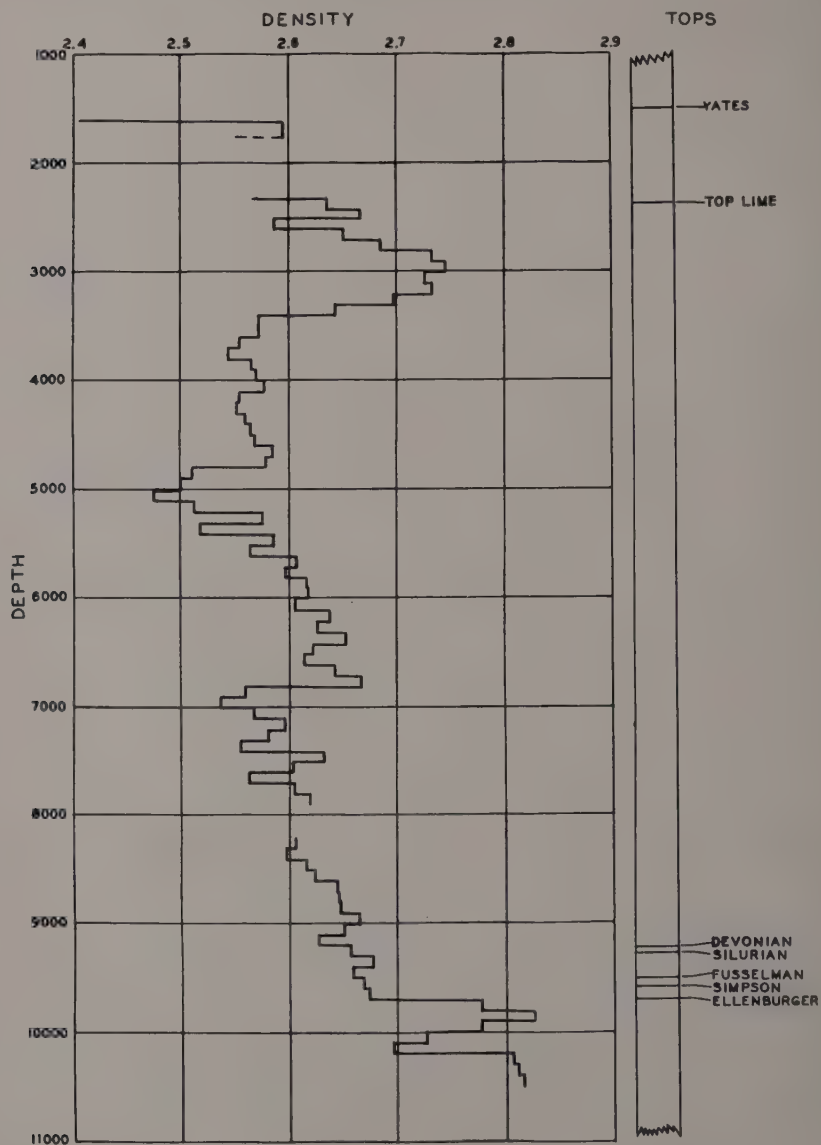


FIG. 6

FIGURE 6. Superior and Atlantic-University 11A — No. 1, NE NE NE Sec. 20,
Block 11 University Survey, Reagan County, Texas.

COURTESY THE ATLANTIC REFINING COMPANY

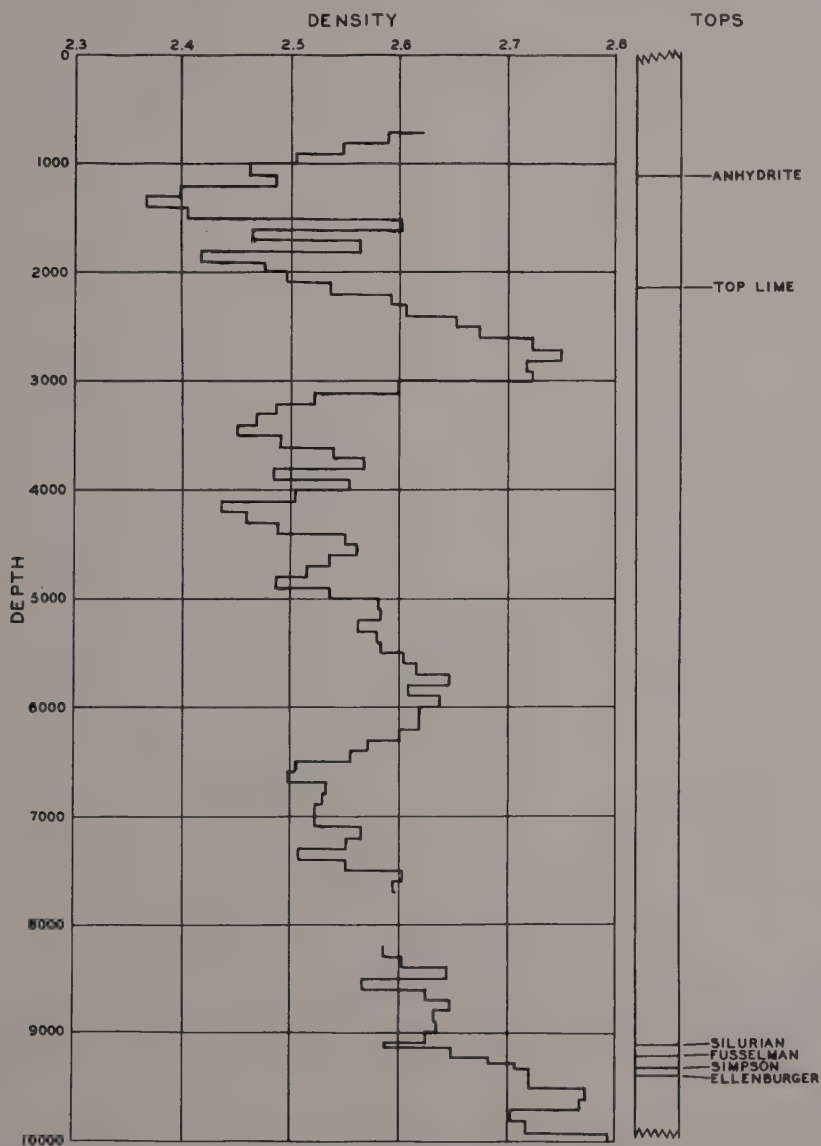


FIG. 7

FIGURE 7. Atlantic-University 48A — No. 1, 1966' from East line and 671' from South line Sec. 18, Block 48 University Survey, Reagan County, Texas.

COURTESY THE ATLANTIC REFINING COMPANY

DENSITIES OF BASEMENT SAMPLES

(Samples were run at the laboratory of the Bureau of Economic Geology by Ray O. Moran and Paul Wishart).

Cut.—Density run on cuttings after picking out sedimentary cavings.

A—Run by Atlantic

Beg.—Bureau of Economic Geology.

Core—Density run on core fragment.

WELL NAME	INTERVAL	DENSITY
ANDREWS COUNTY		
Gulf 9E University Z	11100-5 (Cut.)	2.76 A
42-B-UL		
Phillips 38 University	8000-05 (Cut.)	2.63 A
30-10-UL		
Phillips 57 University	8030-5 (Cut.)	2.63 A
29-10-UL		
Shell & Texas 1 Collins	10370-80 (Cut.)	2.72 A
4-A40-PSL		
BAILEY COUNTY		
Phillips 1 Stevens	8190-8200 (Cut.)	2.60 A
BREWSTER COUNTY		
Dodson 1 Texas American Syn.	6100-6400 (Cut.-float)	
BRISCO COUNTY		
APC 1 Hamilton	8775 (Cut.)	2.76 A
Hunt Ritchie #1	7790-7890 (Core)	2.99 A
Hunt Ritchie #2	7475-7590 (Core)	2.92 A
CARSON COUNTY		
Shamrock 1 Thompson	3156-59 (Cut.)	2.67 A
Tipton et. al. 1 McConnel	3081 (Cut.)	3.04 A
CHAVES COUNTY		
Humble State N	3500-3	3.00 A
	3804-9	3.02 Beg.
	(Core)	2.79 Beg.
CHILDRESS COUNTY		
Stanolind Owne	7381-84	2.65 A
	(Core)	2.64
CLAY COUNTY		
Texas 41 Byers	4250-55 (Cut.)	2.66 A
COLEMAN COUNTY		
Killam 1 Gill	3400 (Cut.)	2.68 A
	3815-20 (Cut.)	2.69 A

COTTLE COUNTY

Jones & Stasney, Wiley—J. H. Stephens	4850-55	2.66 A
6-B	4900-5155	2.66 A
	4950-55	2.70 Beg.
	5200-10	2.63 Beg.
G. Crude 13-1 Swenson—J. H. Stephens	5410-23 (Core)	2.79 (Avg.)
13-B	5719-22 (Core)	2.75 A (Avg.)
G. Crude 33-1 Swenson—J. H. Stephens	5449-52 (Core)	2.64 A (Avg.)
33-B		
General Crude 133-1 Swenson	5440-50 (Cut.)	2.65 A

CROCKETT COUNTY

Amerada 1 P Shannon	7825-35 (Cut.)	2.66 A
---------------------	----------------	--------

CROSBY COUNTY

Humble 1 Irwin	9947 (Core)	2.94 A
----------------	-------------	--------

DICKENS COUNTY

Magnolia 1 Wiley	7700-16 (Cut.)	2.71 A
305-1-HGN	7710-16 (Cut.)	

ECTOR COUNTY

Phillips 1-J-TXL	11210-15 (Cut.)	2.73 A
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EL PASO COUNTY

Jones 1 Sorely	2213-20 (Cut.)	2.79 A
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FISHER COUNTY

General Crude 1 Arken	7505-10 (Cut.)	2.67 A
214-3-HTC		
General Crude 12-Flanagan	6743-6 (Cut.)	2.74 A
200-1-BBB&C		
Texas 7 Stephens	6140-51 (Cut.)	2.70 A
77-1-HTC		
General Crude #1 Parker	7015-20 (Core)	2.70 A (Avg.)

FLOYD COUNTY

Sinclair 1 Massie	10353-8 (Core)	2.80 A
7-T BSF		

FOARD COUNTY

Phillips 1 Walker	4475 (Core)	2.69 A
		2.68 Beg.
Roxana 1 Mathews	2585 (Cut.)	2.66 A

GARZA COUNTY

Stan 1 Bird	8540-2 (Cut.)	
82-5-GHH	8540-45	2.64 A

GILLESPIE COUNTY

Thousand Islands 1 Hayden	1446 (Cut.)	2.66 A
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GRAY COUNTY

Phillips	3105-10 (Cut.)	2.72 A
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6 URB		
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Magnolia #1 Latham	3418-31 (Cut.)	2.66 A
--------------------	----------------	--------

Skelly Heigholt	2984-90 (Cut.)	2.63 A
-----------------	----------------	--------

Buck Anderson 1 Beavers	3200-05 (Cut.)	2.64 A
-------------------------	----------------	--------

HALE COUNTY

Honolulu & Sinclair Clements	10060-70 (Cut.)	2.82 A
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	10245-50 (Cut.)	2.85 A
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Amerada #1 Kurfees	10250 (Core)	2.85 Beg.
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Stanolind #2 Fisher	8370-80 (Cut.)	2.68 A
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HOCKLEY COUNTY

Humble 1 Hobgood	9919 (Core)	3.03 A (Avg.)
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	10174-80 (Core)	2.28 A
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Honolulu & Sun Ray 1 Moore	11304-05 (Core)	2.62 A (Avg.)
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		2.60 Beg.
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JONES COUNTY

Hunter & Hunter 1 Steele	5090-3 (Cut.)	2.64 A
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KENT COUNTY

General Crude 82-1 Jones	7669-84 (Core)	2.67 A
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82-6-WMWRR		
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Superior 8 Wood	7890-910 (Cut.)	2.68 A
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194-G-WNWRR		
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KIMBLE COUNTY

Philups 1 Spuller 10—Chance	4255-60 (Cut.)	2.64 A
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KING COUNTY

Ohio 1 Burnett—Gates	6430-38 (Cut.)	2.66 A
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Continental 1 Martin	6980-7200 (Cut.)	2.60 A
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167-F-HTC		
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Ohio #2 Ross	6470-73 (Cut.)	2.60 A
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LUBBOCK COUNTY

Amerada Stribling	10679 (Cut.)	2.62 A
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Magnolia 1 Johnson	10171-78 (Core)	2.68 A
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		2.67 Beg. (Avg.)
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Humble 1 Farris	11780 (Core)	2.65 A
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		2.62 Beg.
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LYNN COUNTY

Phillips 1 A Bartley	9908-10 (Cut.)	2.63 A
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McCULLOCH COUNTY

Prairie O. & G. 1 Zelle 3450 (Core) 4.52 A

MENARD COUNTY

Phillips 1 Mota 501-Bradford 3900-5 (Cut.) 2.66 A

MITCHELL COUNTY

Sun 2 Elwood 8464-74 2.63 Beg.
25-16-SPRR 8520-24 (Core) 2.65 Beg.
2.67 A

McCULLOCH COUNTY

Themas #1 White 3035 2.96 A

MOTLEY COUNTY

Humble, 2H Matador 7875 (Cut.) 2.68 Beg.
131-M Matador 7878-82 (Core) 2.69 A
Gen. Crude 43-1 Swenson-J. H. Stephens 4789-92 (Core) 2.71 A
General Crude 143-1 Swenson 4780-89 (Cut.) 2.66 A
General Crude 5-1 Swenson 5149 (Core) 2.71 A

NOLAN COUNTY

Honolulu 3 Whittaker 5656-9 (Core) 2.63 A
35-20 T-P
Honolulu 2 Whittaker 5687-8
35-20 T-P 5696-7 (Core)
5680-81 2.58 A
5701-02 2.53 A
6100-10
Seaboard 1A Hanks 6140 (Cut.) 2.66 A
28-Z T.P. 5484-5510 (Core) 2.60 A
American Trading 1 Little
25-20-T-P
Seaboard 1 Earwood 6885-90 (Cut.) 2.65 A
211-64 HTC
Honolulu 4 Whittaker 5840 (Core) 2.37 A
35-20-TP
Seaboard 1 Jordan 6430-4 (Cut.) 2.69 A
14-Z TP 6440-45 2.79 A

OLDHAM COUNTY

Stanolind 1 Greene 6112-4 (Core) 2.62 A
2.62 Beg.

PECOS COUNTY

Phillips 1 Pascoe 4630-40 (Cut.) 2.96 A
Gulf 1 O'Sullivan 4630-35 (Cut.) 2.83 A

POTTER COUNTY, COLORADO

Colorado Int. 13-41 Masterson 2419-24 (Cut.) 2.64 A

RUNNELLS COUNTY

Superior 1 McDowell	6283 (Cut.)	2.72 A
80-TNORR		

SCHEILCHER COUNTY

Phillips 1 Callan 311-Walhelm	6058-65 (Core)	2.69 A
Humble 1 Spencer-HEWT	6909-10 (Core)	2.59 A
176-A		2.53 Beg.
Humble 1 Stanford-HEWT	9020 (Core)	2.61 A
Atlantic 1 Roberts-HEWT	7751 (Core)	2.63 A
175-A		

SCURRY COUNTY

Sun and Ohio 1 Helms	(Core)	2.83
633-97-HTC		2.84 A
Humble 1 Nachlinger	8266 (Core)	2.85 A
146-3-HTC		
Superior 1 Jordan	8920-21 (Cut.)	2.70 A

SUTTON COUNTY

Shell 3 Miers	4950-50	2.60
53-14-TWNGRR	4950-5003 (Cut.)	2.66 A

SWISHER COUNTY

Standard of Texas 1 Johnson	(Core)	3.00 A (Avg.)
		3.01 Beg.

TAYLOR COUNTY

Jamison 1 Webb 46 Lunatic Asylum	6845-50 (Cut.)	5845 (Very Porous)
	6081 (Core)	6305 (Very fine floats)
	6125-6 (Core)	
	6234-44 (Cut.)	2.60 A (Avg.)

TOM GREEN COUNTY

Honolulu 1 Nosworthy A. E. White	7688-9 (Core)	2.62 A
Richardson 1 Swartz	7160-68 (Cut.)	2.67 A

CONSTITUTION AND BY-LAWS
(As amended to November 13, 1952)

ARTICLE I

The name of this Society is the *Geophysical Society of Tulsa*. It shall be the Tulsa Section of the Society of Exploration Geophysicists.

ARTICLE II

OBJECT

The object of this Society is to promote the science of geophysics especially as it applies to exploration, and to promote fellowship and cooperation among those persons interested in geophysical problems.

ARTICLE III

MEMBERSHIP

1. Any person interested in the geophysical profession shall be eligible for membership.
2. Applications for membership shall be submitted in writing, and shall be signed by three sponsors who are members of the Society.
3. Applications shall be approved for membership by the Executive Committee.
4. The annual dues of members of the Society shall be three dollars (\$3.00) payable in advance on the first day of each calendar year.
5. Members whose applications are approved after July 1 shall be required to pay only one-half the regular annual dues for the remainder of the first year of their membership.
6. Charter Members of this Society will be those who attended the first organizational meeting of the Society on February 4, 1947, or who attended the second meeting on March 13, 1947, and signed the respective roll as charter members, and who have paid dues for the year 1947.

ARTICLE IV

RESIGNATION AND SUSPENSION

1. Any member may resign from the Society at any time. Such Resignation shall be in writing and shall be accepted by the Executive Committee, subject to the payment of all outstanding dues and obligations of the resigning member.

Note: The Constitution was originally adopted March 13, 1947. It was amended January 8, 1948, November 11, 1948, February 9, 1950, and November 13, 1952. The By-Laws were amended February 9, 1950, and November 13, 1952. The editor is very much indebted to Paul L. Lyons for his assistance in writing and editing this revision of the Constitution.

2. Any member who is more than one year delinquent in payment of dues shall be suspended from the Society. Any delinquent or suspended member, at his own option, may request in writing that he be dropped from the Society and such request shall be granted by the Executive Committee after due notification. Any member more than two years in arrears shall be dropped from the Society.
3. Any person who has ceased to be a member under Section 1 or Section 2 of the Article may be reinstated by unanimous vote of the Executive Committee subject to the payment of any outstanding dues and obligations which were incurred prior to the date when he ceased to be a member of the Society.

ARTICLE V

OFFICERS AND THEIR DUTIES

1. The officers of the Society shall be: President, First Vice-President, Second Vice-President, Secretary, Treasurer, and Editor.
2. There shall be district representatives to the Society of Exploration Geophysicists, as provided in the constitution of that society.
3. The Executive Committee shall consist of the Officers, the two most recent available past presidents, and the district representative, or representatives, to the Society of Exploration Geophysicists.
4. The Officers shall be elected by a ballot as hereinafter provided at the Annual Meeting, and shall hold office for one year.
5. The President shall preside at the meetings of the Society and of the Executive Committee. He shall call special meetings when deemed advisable; shall appoint all committees except as otherwise herein provided; and, jointly with the Secretary-Treasurer, shall sign all written contracts and other obligations of the Society. In the temporary absence of other Officers, he shall assume their duties or delegate them.
6. The First Vice-President shall be responsible for arranging the technical program of the Society, and shall have authority to appoint such assistants as he may require. He shall perform the duties of President in the absence or disability of that Officer, and in case of the President's resignation shall become President for the remainder of the term.
7. The Second Vice President shall be responsible for arranging entertainment, and shall have power to appoint members to assist him.
8. The Secretary shall maintain a complete list of the membership of the Society and of its Executive Committee, shall mail advance notice of meetings to all members, shall keep minutes of meetings of the Society, and of its Executive Committee, shall notify the members by mail of proposed amendments to the Constitution, and shall mail and receive ballots.

The Secretary shall submit to the Secretary-Treasurer of the Society of Exploration Geophysicists a report of each meeting of this Society and of its Executive Committee within two weeks following each such meeting. He shall also submit to the Secretary-Treasurer of the Society of Exploration Geophysicists the names of all Officers and Committee members within two weeks after their election or appointment.

9. The Treasurer shall collect all dues and other obligations to the Society, shall make disbursements authority by the Executive Committee and shall transact such other business as may be authorized by the Executive Committee. He shall maintain a chronological record of all receipts and expenditures as well as a system of records explaining each expenditure, including evidence of authority to expend funds and evidence of payment. He shall report the condition of the Treasury at each Annual Meeting and at other times upon request of the Executive Committee.

When so instructed by the Executive Committee, he shall make application to the Secretary-Treasurer of the Society of Exploration Geophysicists for such portion of the expenses to be borne by that Society, as may be needed, and shall submit to the Secretary-Treasurer of the Society of Exploration Geophysicists, prior to the annual meeting of that Society, an itemized account of the expenditure of such funds as may have been received from the Society of Exploration Geophysicists during the preceding calendar year.

A quorum of the Executive Committee shall consist of at least four members and approval by at least four members will be necessary to conduct all business of the Society.

10. The Editor shall be in charge fo the editorial business, shall submit an annual report of such business, shall have authority to solicit papers and material for the regular society publication and for special publications, and may accept or reject material offered for publication. He may appoint editorial assistants.
11. The Executive Committee shall transact all business of the Socieity not otherwise herein specifically provided for. It shall elect all members to the Society, shall authorize all expenditures, shall direct investments of Society funds, shall establish and supervise publications; shall approve and recommend all proposals for special assessments; shall fill vacancies occurring in any office except in the office of President, to which the First Vice-President automatically succeeds, and shall have the power to review all actions and appointments by the Officers.
12. The District Representatives of the Society of Exploration Geophysicists shall represent the Society and its members at meetings of the Council of the Society of Exploration Geophycists.

ARTICLE VI

ELECTION OF OFFICERS

1. A slate of nominations for officers shall be prepared by a Committee of Nominations consisting of the President and the two most recent available Past Presidents. They must secure the consent of all candidates nominated. This slate, of two or more candidates for each office, shall be prepared and announced to the Society at its regular meeting in March of each year.

Additional nominations for each office may be made by written petition of ten or more members in good standing. Such nominations must be submitted to the President not later than the close of the regular meeting in April.

The election of officers shall be by secret mail ballot. The Secretary shall mail to all members, not later than three weeks preceding the Annual Meeting, a ballot listing all candidates properly nominated for each office. Each member voting shall cast one vote for each officer and shall return his ballot to the Secretary in a sealed envelope carrying on the outside his written signature. Only ballots so prepared by members in good standing and received by the secretary by 4 P.M. on the Monday immediately preceding the Annual Meeting shall be valid.

The Secretary shall indicate which ballots are valid and shall deliver them unopened to the Committee on Nominations. The Committee on Nominations shall supervise the counting of ballots prior to the Annual Meeting. The candidates receiving the greatest number of votes cast for an office shall be declared elected to that office. In case of a tie, the Executive Committee shall decide which of the tied candidates shall be elected.

2. The Committee on Nominations shall prepare a slate of nominations for any posts of district representatives to the Society of Exploration Geophysicists, which may need to be filled. Additional nominations may be made in the manner set forth in Section 1. The election shall be by secret ballot at least three weeks prior to the annual meeting of the Society of Exploration Geophysicists.

ARTICLE VII

MEETING

1. The Annual Meeting shall be held in May of each year, and shall be held on the second Thursday of May, unless otherwise specified by the Executive Committee and due notice given to the membership.
2. The Regular meetings of the Society shall be held on the second Thursday of each month except during the months of June, July, and August, unless otherwise provided by the Executive Committee.

3. Special meetings may be called at any time by the President of the Society.
4. The time and place of regular meetings, the nature of the technical program and the entertainment, shall be determined by the Executive Committee.

ARTICLE VIII AMENDMENTS

1. This constitution may be amended by a three-fourths vote of the members present at any regular meeting, provided that the proposed amendment has been approved for submittal by the Executive Committee and has been moved at a regular meeting previous to the meeting at which the ballot shall be taken.
2. By-laws may be changed by majority vote of members present at any regular monthly meeting.
3. Nothing in this Constitution or By-laws shall be inconsistent with the Constitution and By-laws of the Society of Exploration Geophysicists.

BY-LAWS

- I. The Officers and the Executive Committee may arrange for the affiliation with other duly organized groups or societies which by object, aims, constitution or practice are aiding, assisting, or developing the profession of geophysics or allied technology.
- II. Until such time as a sufficient number of qualified past Presidents has been created, so as to provide those members necessary to serve on the Executive Committee as provided in the constitution, these Executive Committee members shall be chosen by the Society by a majority vote from open nominations at the Annual Meeting.
- III. Prior to the Annual meeting the Treasurer shall close his accounts and submit them to a Committee of three members of the Executive Committee designated by the President. These members shall audit the accounts and then certify their correctness by signing an entry in the cash book.

The new Treasurer shall accept the Society Funds by signing an entry to that effect in the cash book.

- IV. The Society shall publish a journal. The journal shall be published at intervals designated by the Executive Committee. All reports to the Society by its officers and committees may be published in the journal. Each issue shall contain a membership list. Each issue shall list all committees. Original papers, reviews, abstracts, notes or information deemed by the Editor to be of interest to the members of the Society shall be published in the journal. The editor shall be sole judge of whether such material is to be published. The executive committee

may authorize the printing of the journal and may authorize financing and distribution of the journal.

- V. The first editor may be elected at a regular session of the Society following passage of this by-law at a regular meeting.

RULES FOR THE ADMITTANCE OF NEW MEMBERS

1. Any member interested in the Geophysical profession shall be eligible for membership in the Geophysical Society of Tulsa.
2. Applications for membership shall be submitted in writing, and shall be signed by three sponsors who are members of the Society.
3. Applications shall be approved for membership by the Executive Committee.

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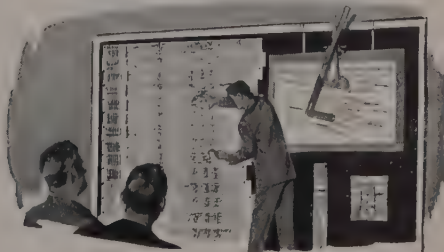
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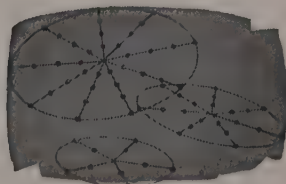
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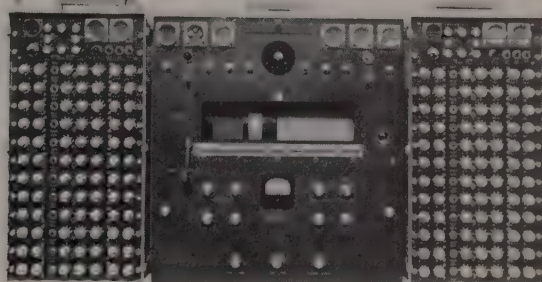
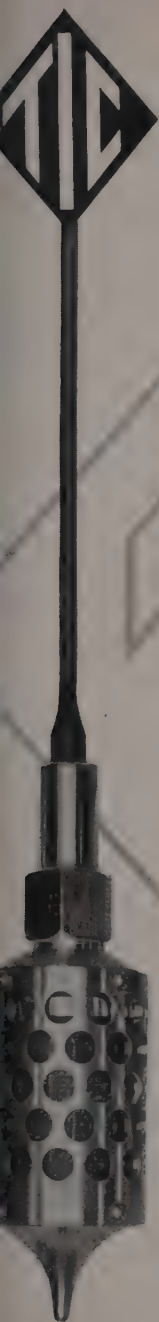
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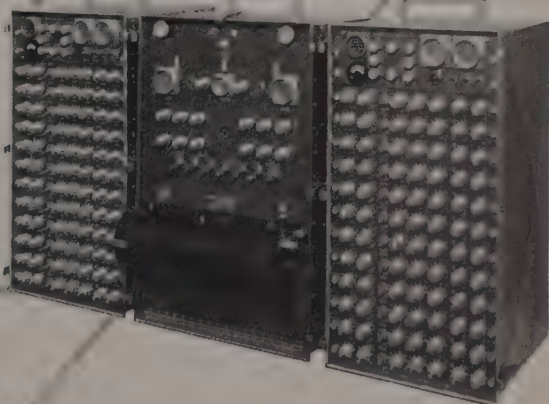
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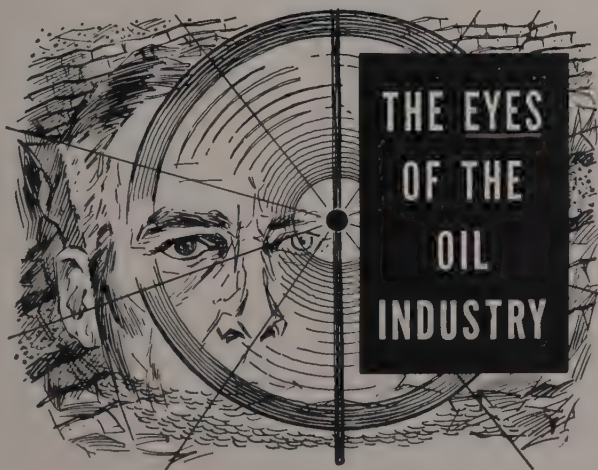
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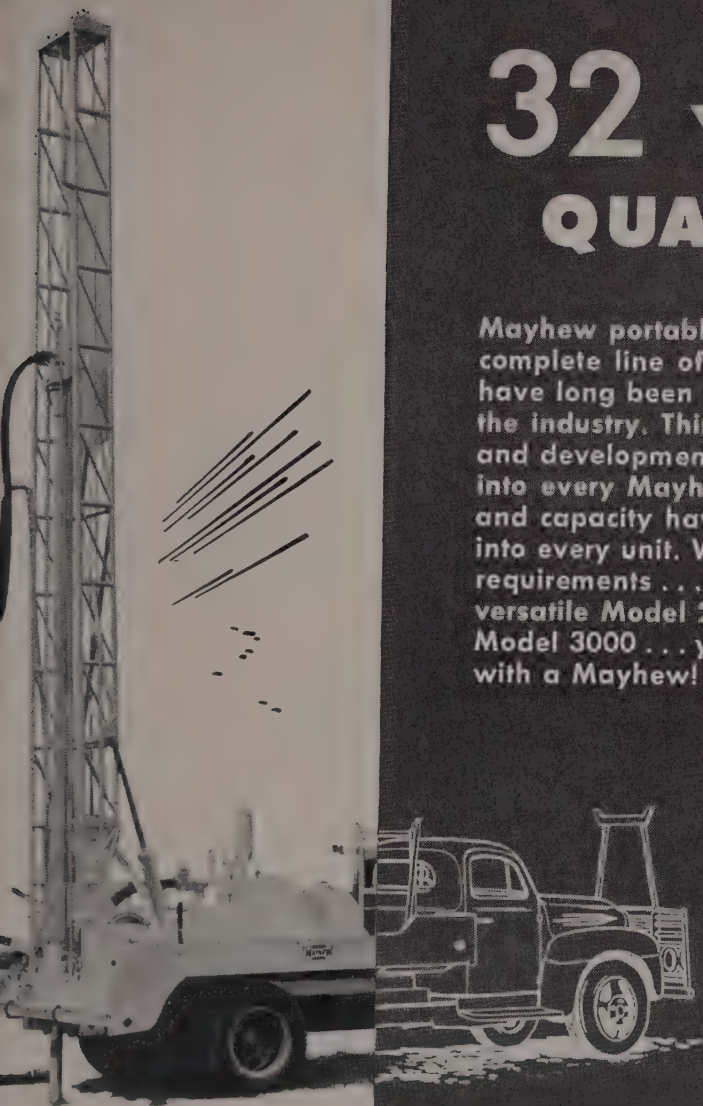
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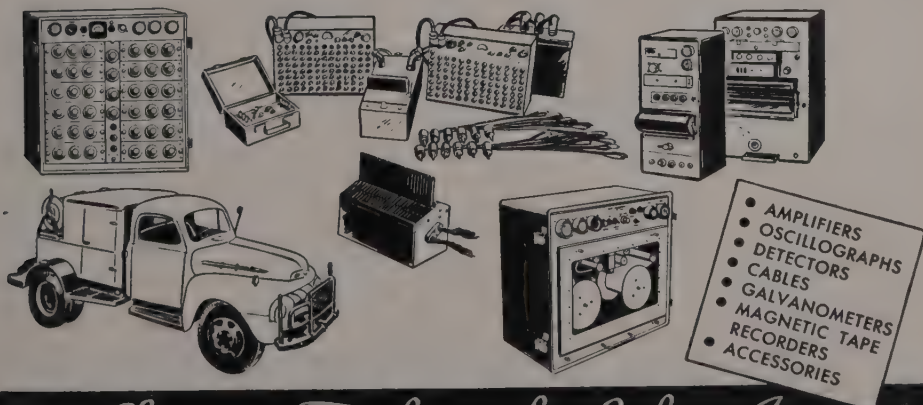
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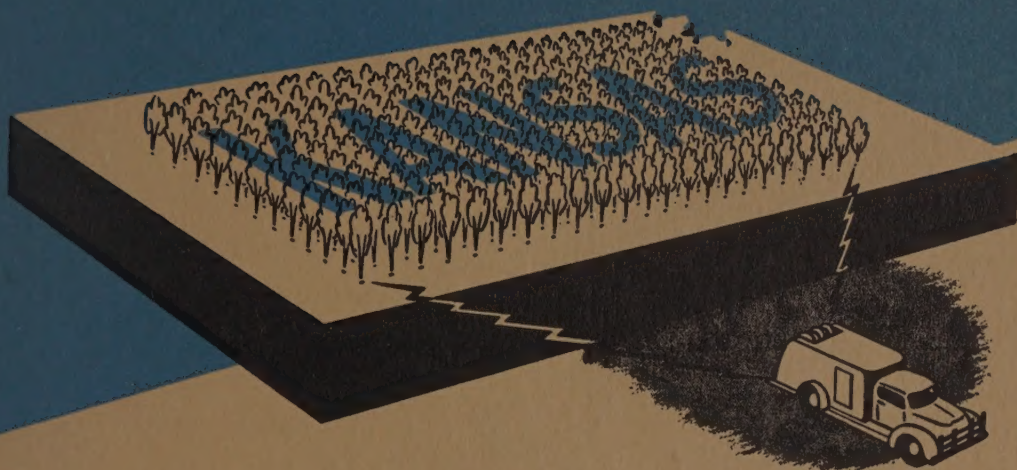
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